What is claimed is:

1. A method for the contactless determination of a thickness of a layer (20) made of electrically-conductive material applied to a component (17) made of ferromagnetic material, the following measuring steps taking place with the aid of at least one measuring coil (14) carrying an alternating current and mounted on a coil form (13), the inductance and resistance values of which are evaluated:

- Determine the inductance value $L_{0,d,f}$ of the coil (14) in a measurement carried out exclusively with respect to a component (17) as the object of measurement made of ferromagnetic material, the coil (14) being acted upon with an alternating current frequency f; the distance between the coil form (13) and the object of measurement is d [L-premeasurement, to determine the normalized value]

- Determine the resistance value $R_{0,d,f}$ of the coil (14) in a measurement carried out exclusively with respect to the component (17) as the object of measurement made of ferromagnetic material, the coil (14) being acted upon with alternating current frequency f; the distance between the coil form (13) and the object of measurement is d [R-premeasurement, to determine the distance]

- Convert the resistance value $R_{0,d,f}$ with the aid of a distance characteristic into the value of distance d [determination of distance]

- Determine the inductance value $L_{x,d,f}$ of the coil (14) in a measurement carried out with respect to the layer (20) to be determined, the coil (14) being acted upon with alternating current frequency f; the distance between the coil form (13) and the coated component (17) is d [L-post-measurement, to determine the normalized value]

- Convert the determined inductance values $L_{0,d,f}$ and $L_{x,d,f}$ to a dimensionless measured value M_e [determination of normalized value]

- Convert the measured value M_e with the aid of a family of calibration curves with consideration for the determined value of distance d to a layer thickness value a [determination of layer thickness]

2. The method as recited in Claim 1,

wherein

the dimensionless measured value M_e is determined using equation

$$M_e = B \cdot \frac{L_{x,d,f} - L_{0,d,f}}{L_{\infty,AB,f} - L_{0,AB,f}}, \quad (1)$$

(1):

In which

$L_{x,d,f}$ = inductance value determined in the post-measurement

$L_{0,d,f}$ = inductance value determined in the premeasurement

$L_{\infty,AB,f}$ = inductance value of the coil (14) determined in a measurement carried out exclusively with respect to an object of measurement made of the electrically conductive material; the value of distance d between the coil form (13) and the object of measurement is AB

$L_{0,AB,f}$ = inductance value of the coil (14) determined in a measurement carried out exclusively with respect to an object of measurement made of the ferromagnetic material; the value of distance d between the coil form (13) and the object of measurement is AB

B = constant factor

3. The method as recited in Claim 2,

wherein

factor B is 1000.

4. The method as recited in one of the Claims 1 through 3,

wherein

alternating current frequency f is a frequency from the high-frequency range, e.g., 4 MHz.

5. The method as recited in one of the Claims 2 through 4,

wherein

the value AB of the distance d that is selected is half the sum of the minimum and maximum distance between the coil form (13) and the object of measurement.

6. The method as recited in one of the Claims 1 through 5,

wherein

the family of calibration curves includes a plurality of calibration curves, each of which represents a concrete, unique distance d.

7. The method as recited in Claim 6,

wherein

from the family of calibration curves, a calibration curve is selected to convert measured value M_e to a layer thickness value a, the distance parameter value of which has the smallest deviation from the determined distance d.